More Interactive Learning, Less Lecturing

Esri charts a new course in training

By Carla Wheeler, Esri Writer

Before they started lessons on symbolizing data and creating map layouts, Dave Donley and Delores Fillingame cracked open their fortune cookies.

Instructor Mark Stewart gave the cookies to his students as he welcomed them to *ArcGIS Desktop II: Tools and Functionality,* one of 35 GIS courses Esri offers. He asked everyone to introduce themselves, read their fortune aloud, and add "with ArcGIS" to the end of each fortune.

"Nothing is impossible with ArcGIS," Fillingame said. "Love and you shall be loved with ArcGIS," said Donley. Laughter filled the classroom at the Esri Learning Center in Redlands, California, as other students chimed in: "Eat chocolate and have a sweet life with ArcGIS"; "Your smile has great charm with ArcGIS"; and, perhaps most appropriate, "A lesson well learned is never forgotten with ArcGIS."

Esri wants students to learn GIS well and never forget what they've learned. That's why Esri Training, which develops and delivers the company's software classes, recently adopted a new course design and training delivery style that stresses interactive, peer-to-peer learning; real-world GIS skills; and, yes, even having

fun. Say goodbye to formal lectures and hello to lessons that focus on essential theories, concepts, and skills and stimulate students to speak up and share their GIS knowledge.

"We want learning to be fun, easy, and applicable," said Esri national instructor manager Krista Page when explaining why this new training approach was adopted. "Research on adult learning shows students retain more when they are actively involved in the learning experience. So now we've expanded the interactive component."

Students Take On New Role

Until now, Esri instructors typically taught in a traditional style. They would lecture for up to 45 minutes, give a demonstration, then assign a hands-on software exercise. Students usually worked by themselves.

Instructors did most of the talking; students listened. Today, however, students take a greater role in the classroom, answering questions and contributing ideas. The instructors act as facilitators, encouraging the class to think and talk about the GIS concepts, tools, and skills they're learning. By helping students understand how this new information relates to their jobs and letting them integrate their experience, instructors help them better relate the material with what they already know. "Every adult comes to class with a certain level of experience, and being able to share what you already know and then to build on that, that's a

big deal," Page said.

The new course design and delivery style incorporates

- Icebreakers (like the fortune cookie readings) and brainteasers to energize and involve everyone and help people get to know each other. When students are more at ease with each other, they will feel more comfortable participating in class.

- Problem-solving exercises conducted in small groups or at whiteboards. In the online instructor-led Virtual Classroom (where 50 percent of Esri's courses are taught), those exercises take place in breakout "rooms" on the Web.

- Instruction, demonstrations, and hands-on software exercises that emphasize practical, real-world scenarios and situations.

- More questions posed by the instructor that spur students to think and share their on-the-job experiences, insights, and knowledge of GIS with classmates.

- Review questions to ensure that students understand the concepts, skills, and software tools taught in each lesson. A new supplemental workbook also includes tests that reinforce understanding.

According to Page, students like this mix of activities. "The more senses you use, the more likely you are to learn and retain," she said. "Previously, there would have been a lot of listening. Now there's listening, there's talking, there's writing, and after an activity, there's a

summary of takeaways from the lesson."

Group activities have been added. "There's a greater focus on student-to-student interaction," Page said. "When you pair people up and they start learning from each other and sharing their experiences, the knowledge transfer increases."

Stewart, who began teaching at Esri 14 years ago, said that combining short interactive lectures, hands-on exercises, brainteasers, and demonstrations keeps people alert and learning. "You are causing the brain to shift gears," he said.

In general, adults have short attention spans. Page observed that when she listens to a lecture that drags, she starts mentally compiling a grocery list or thinking about her unanswered e-mails. "By engaging students and interacting with them in a variety of ways, students will learn more," she said. "They'll also retain more. And more importantly, they will be able to quickly adapt and apply what they have learned when they get back to their jobs on Monday morning."

A New Teaching Style

Before class began in earnest, the 12 students in Stewart's class learned he wanted to hear from them rather than just listen to his own voice for the next three days. For each lesson, Stewart lectured for 15 or 20 minutes. Then he showed the students a demo, organized a group exercise, assigned a hands-on exercise using GIS software, then recapped and discussed with the students what they learned.

He drew people into a conversation by gently working questions into the lesson. Stewart never likes to put anyone on the spot, so he usually poses questions to the entire group. "We want to challenge students and keep the learning environment a safe and comfortable place."

During one lesson, Stewart broke the class up into small groups based on where students sat and handed out several maps for them to study. A map of the Gulf of Mexico after the oil spill that displayed various layers of data, including the locations of debilitated turtles and injured marine animals, generated a lot of interest. "What would you guys do with this map?" Stewart asked.

One student offered that it would give an idea of where to focus rehabilitation efforts. "It would help you be able to find out which specific industries were affected by the spill," said Donley. More ideas followed, fast and furious. This is the type of conversation instruc-

tors hope to stimulate using the new course design and delivery style.

Donley, a fire captain and GIS manager for the California Department of Forestry and Fire Protection (CAL Fire) assigned to Riverside County said Stewart's class was fun, inclusive, and drew on the experience of GIS professionals. "Instead of it being a lecture, there are more questions and answers," Donley said during a break. "He throws [a topic] out there and lets you speak up. We have almost as much input as he did."

Fillingame, who uses GIS to map gas lines and other utilities for the U.S. Navy in San Diego, California, said she enjoyed the interactive aspects of the class. "It was a lot more fun than sitting and listening to a lecture," she said. "You got to hear what other people thought—their experiences. And Mark is a crack-up. He made it fun with the bit with the fortune cookies." She also said a brainteaser he gave the class after lunch one day was just

the ticket to get them back in a learning mode. "It got us moving and thinking," she said.

Though handing out fortune cookies in the Virtual Classroom isn't possible—yet—students can laugh using emoticons. Instructors also host small group activities in virtual breakout rooms that include writing on group whiteboards, chatting, and polling. Students can interact with each other and the instructor during virtual lectures, demonstrations, and exercises. Instructors can even peer into students' computers to monitor progress during individual exercises or check in on groups and facilitate discussion.
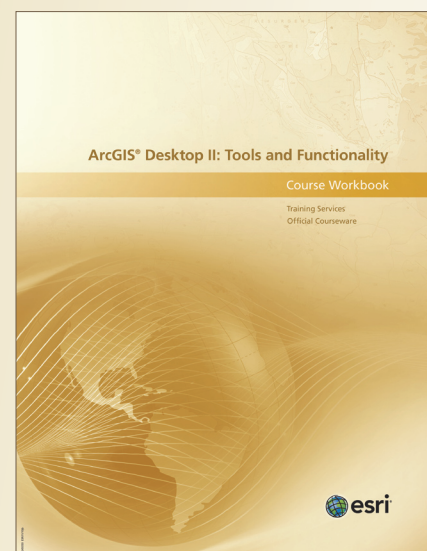
Instructor Colin Childs, who teaches in the Virtual Classroom, said he now e-mails students in advance so he can find out a bit about their experience level using GIS software so he can—to a certain extent—tailor what he teaches to the individuals in the group. "You want to fill in the gaps of what they don't know," Childs said.

New Student Workbooks Complement Interactive Learning Approach

New single-course workbooks complement Esri's new teaching style. According to many educators, adults learn best when they can actively participate and solve problems in class and clearly understand how what's being taught relates to their jobs. Esri instructors have incorporated these ideas into a new course design and delivery system as described in the accompanying article "More Interactive Learning, Less Lecturing: Esri charts a new course in training."

Esri's content group, which develops course curriculum, has updated course materials to incorporate these adult learning principles and support the new teaching methodology. A new single workbook for each class replaces the separate lecture and exercise books previously supplied to students. The new workbook supplies support-

ing information related to all concepts, topics, and exercises included in each lesson with ample space for note taking. Depending on the concept or topic, supporting materials might be content from a slide the instructor presented, a workbook activity that reinforces a concept or topic such as a scenario-based question, a graphic representing a concept or topic, or text that summarizes key points. "We refer to it as a workbook because learners will actually work in it while taking their course," said Patty McGray of Esri's Educational Services.

More Interactive Learning, Less Lecturing

Adult Learning Principles in Action

How do adults learn best? Researching this question prompted Esri Training to change the course design and delivery style of its instructor-led courses so students could more easily apply the skills and concepts they learned.

However, the change wasn't driven by negative student feedback. "Our former course design had served us well, but we think we have something better," Page said. The seeds of this change were planted when Esri instructors became certified through the Computing Technology Industry Association (CompTIA). A nonprofit trade association, CompTIA sets standards for information technology (IT) companies and professionals such as instructors. All Esri instructors are now Certified Technical Trainers.

"Adults need to be motivated—they want to know, what's in it for me?" Page said. Students wonder what they will get out of a course and how it will apply to their jobs. That's why course materials now include a supplemental workbook revamped with more real-world scenarios that teach concepts and skills.

In the new course format, the instructors outline course goals when class begins, go over the learning objectives for each lesson, and test students to make sure they've understood the material taught in that lesson. Tests are usually a short series of questions that also appear in the supplemental student workbooks where students can jot down answers.

Page said the scenarios and the clear, step-by-step exercises in the new workbook make the courses more interesting and useful. "When I take a training class, I want to be able to go back to my job and take what I have learned and start using it right away," she said, adding that she thinks that will now happen more often with the GIS courses. "You're motivated. You understand why you are learning this. You start to see these real examples of how this plays into the world and how to bring it into your organization. You get excited. You're learning from your peers and the instructor. And after you get back to work, you are kind of ready to go. You've learned some valuable skills that you can put into practice right away."

About the Author

Carla Wheeler is Esri's defense and intelligence staff writer and the editor of *ArcWatch,* a free monthly e-magazine that covers GIS news and trends; provides information on new products, training, and books; and offers technical tips. She joined Esri in 2006 after spending more than 20 years working as a newspaper reporter and editor in California and Minnesota. Follow her on Twitter @gisjourno.

Upgrade Your GIS Skills ▪ Strategies to find time for training

Finding time for GIS training can be a challenge. Esri has resources that can help you reach your training goal—whether it is staying current with the industry, upgrading your skills, or investigating a new career path—no matter how much or how little time you can spare. Even if you don't have days to devote to training, you can accumulate GIS training by devoting a few minutes or hours per week.

10 minutes	Listen to a podcast.	esri.com/podcasts
	Read a blog post on a topic of interest.	esri.com/blogs
	Read a free Esri newsletter.	esri.com/newsletters
20 minutes	Explore an Esri Resource Center.	resources.arcgis.com
	Read an *ArcUser* article.	esri.com/arcuser
	Read an *ArcNews* article.	esri.com/arcnews
1 hour	Watch a free training seminar.	training.esri.com/seminars
	Complete a tutorial.	webhelp.esri.com
	Download and explore a map template.	resources.esri.com/maptemplates/
	Complete a Web course exercise.	training.esri.com
2 to 3 hours	Complete one module of a Web course.	training.esri.com
	Read a GIS Best Practices booklet.	esri.com/bestpractices
1 to 3 days	Complete a Web course.	training.esri.com
	Go through a software workbook.	esri.com/esripress
	Attend an instructor-led class.	training.esri.com